

# **DECORATIVE PICTURE/PHOTO FRAME MAT AND METHOD OF MAKING THE SAME**

## **Field of the Invention**

**[0001]** The present invention generally relates to picture/photo frame mats, and more particularly to a decorative picture/photo frame mat with low cost and appealing appearance, and method of making the same.

## **Background of the Invention**

**[0002]** Picture frames have generally relied upon a flat picture mat for providing an overlay boarder around the periphery of the picture mounted in the frame. Mat boards for framing an article such as a photograph or work of art, are typically made of paper or fiber board wherein the mat is manufactured by laminating at least one paper layer to another, generally heavier gauge, paper layer/fiber board. Usually, the paper mat as a secondary frame adds very little additional interest to the framed item. US Pat. App. 2003/0089013A1 discloses a frame mat with 3-dimensionality made by injection-molding process. While the mat made adds interest to the framed item, the process is complex and increases cost to the final product.

**[0003]** In addition, mat boards may be used to enhance preservation of articles from damage caused by pollutants and chemicals by incorporating certain chemicals into the mat layers. For example, U.S. Pat. No 6,524,413 discloses a preservation mat board for use in framing an article, wherein the mat board comprises a middle foam layer formed from a mixture of a first adsorber (zeolite), foaming agent and polystyrene pellets and a paper layer heat sealed to the middle foam layer.

**[0004]** However, the manufacture of paper or mat board disclosed in the prior arts is complex and the cost is high. Therefore, there is an imperative need to have a picture frame mat that can be easily made with appealing appearance. This invention satisfies this need by disclosing a decorative picture/photo frame mat and methods for the making the same. Other advantages of this invention will be apparent with reference to the detailed description.

## Summary of the Invention

[0005] The present invention provides a decorative picture/photo frame mat that can be easily made with an appealing appearance. In one preferred embodiment, the frame mat comprises one layer of polystyrene and at least one layer of paint/coating. The present invention also provides methods for manufacturing the frame mat. The manufacturing method includes the steps of forming a polystyrene foam sheet, casting patterns/shapes on the sheet, cutting/trimming the sheet to desirable size and dimension, and coating/painting the cut/trimmed sheet.

[0006] Accordingly, one object of the present invention is to provide a decorative picture/photo frame mat with appealing appearance.

[0007] The objectives and advantages of the invention will become apparent from the following detailed description of preferred embodiments thereof in connection with the accompanying drawings.

## Brief Description of the Drawings

[0008] Preferred embodiments according to the present invention will now be described with reference to the Figures, in which like reference numerals denote like elements.

[0009] FIG 1 shows front view of an exemplary decorative picture/photo frame mat.

[0010] FIG 2 shows a cross-sectional view of one preferred frame mat.

## Detailed Description of the Invention

[0011] The present invention may be understood more readily by reference to the following detailed description of certain embodiments of the invention.

[0012] Throughout this application, where publications are referenced, the disclosures of these publications are hereby incorporated by reference, in their entireties, into this application in order to more fully describe the state of art to which this invention pertains.

[0013] Now referring to FIG 1, there is provided a front view of one exemplary picture/photo frame mat 10 in accordance with the present invention. The internal openings 11 within the frame mat 10 provide windows for displaying picture/photos or any art work. The making of the mat will be discussed in detail later.

[0014] FIG 2 shows a cross-section view of the frame mat 10 in this preferred embodiment. The frame mat 10 comprises a polystyrene sheet 12 and a paint/color layer 13. The paint/color layer 13 is facing toward viewers. It is to be appreciated that the paint/color layer may have more than one color. In certain embodiments, a frame mat 10 may comprise multiple paint/color layers that may give different patterns and/or shapes. In other embodiments, the frame mat 10 may comprise more layers. For example, another paint/color layer may be applied to the backside of the polystyrene sheet. In addition, more layers may be laminated onto both sides of the frame mat.

[0015] In one aspect of the present invention, a frame mat may comprise a plastic layer that gives out appealing appearance by itself. For example, at least one pigment compatible with the manufacturing process may be mixed with the plastic resin before the composition is molded. The dispersed pigments give the frame mat a desirable appearance.

[0016] The manufacture of the frame mat 10 includes many known processes. The common techniques used in the processes will not be discussed in detail so as not to obscure the present invention. In preferred embodiments, the method of making the two-layer frame mat 10 comprises the following steps.

[0017] After selecting appropriate polystyrene plastic resin for making the frame mat 10, the PS resin is fed into a machine to be blown/extruded into sheet form. Then, optionally, the PS foam sheets are fed to a machine that casts pattern/shapes on them. This process can be vacuum molded/forming process. After the frame mat is molded, the patterned PS sheets will be trimmed to desirable size and then be diecut with openings (holes). There is not limitation as to the sizes or windows of the openings. Finally, the cut/trimmed sheet is coated/painted.

[0018] In certain embodiments, the paint/color layer(s) may be coated onto the inner surfaces of a mold piece. When the plastic layer is molded in the coated mold piece, the coated paint/color layer(s) may be transferred onto the surface of the plastic layer during the molding process.

**[0019]** Example

**[0020]** The plastic resin polystyrene used was made by Dow Chemical or BASF with grade (685D), density (0.95), molecular weight (300kd) and melt index (2-3.5). The plastic resin polystyrene was mixed with one or more additional materials including zinc stearate, hydrocerol, calsiiums, talc, blowing agent and hydro carbon. The mixed polystyrene plastic resin was fed to a machine (Nakumara, Japan). Plastic sheets were extruded from the machine with a temperature of between 165 --230°C and a time of about 20 minutes. The plastic sheets were molded with patterns/shapes by vacuum forming process with the time/cycle (8-10 seconds), pressure (4-6bar), and temperature (220 – 280°C). Then, the patterned plastic sheets were trimmed and cut into windows by known methods. Finally, the sheets were applied Acrylic emulsion paint with spraying or brush after the sheet is cooled down. The paint/color materials may be any one available. For example, vinyl ink and water base pigment (poster color) have been applied in the present invention.

**[0021]** While the present invention has been described with reference to particular embodiments, it will be understood that the embodiments are illustrative and that the invention scope is not so limited. Alternative embodiments of the present invention will become apparent to those having ordinary skill in the art to which the present invention pertains. Such alternate embodiments are considered to be encompassed within the spirit and scope of the present invention. Accordingly, the scope of the present invention is described by the appended claims and is supported by the foregoing description.